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In the claims:

Please cancel claims 8 and 20 and amend claim 4 as follows:

- 5 1. (original) A method for making a metal surface-mount package comprising:
etching half-etched cavities into a mounting surface of a metal sheet substrate, the half-
etched cavities reaching only partially and not completely through the metal sheet
substrate to an opposite surface to the mounting surface;
filling the half-etched cavities with an insulator;
10 forming drilled vias within the half-etched cavities wherein side edges of the drilled vias
are insulator and not metal, wherein bottoms of the drilled vias reach the metal
sheet substrate;
forming a contact metal layer on the bottoms of the drilled vias;
filling the drilled vias with via metal;
15 forming and patterning metal over the via metal and over the mounting surface to form
external metal pads on the mounting surface, the external metal pads electrically
contacting the via metal and the contact metal layer;
forming inner cavities in the opposite surface that each reach the contact metal layer for
at least two of the drilled vias filled with via metal;
20 placing conductive epoxy on the contact metal layer within the inner cavities;
placing a die onto the conductive epoxy, wherein electrodes on the die make contact with
the conductive epoxy; and
sealing the die within the inner cavity by covering the inner cavity with a cover;
whereby the die is packaged in the metal surface-mount package with external metal pads
25 on the mounting surface for surface mounting the metal surface-mount package to a
printed-circuit board (PCB).
2. (original) The method of claim 1 wherein etching half-etched cavities further
comprises depositing a resist layer onto the mounting surface, patterning the resist layer,
30 developing the resist layer to form openings in the resist layer, and etching the metal
sheet substrate through the openings in the resist layer to form the half-etched cavities.

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3. (original) The method of claim 2 wherein the resist layer is a photo or radiation-sensitive layer.

4. (currently amended) The method of claim 1 wherein forming drilled vias within
5 the half-etched cavities comprises drilling with a mechanical drill ~~or a with~~ or with a
laser, or etching.

5. (original) The method of claim 1 wherein filling the drilled vias with via metal
comprises plating or depositing the via metal into the drilled vias.

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6. (original) The method of claim 5 wherein the via metal is copper or a copper alloy.

7. (original) The method of claim 1 wherein forming and patterning metal over the via
metal and over the mounting surface to form external metal pads on the mounting surface
15 comprises attaching a metal foil to the mounting surface and patterning the metal foil to
form the external metal pads.

8. (canceled)

20 9. (original) The method of claim 1 wherein the cover is metal.

10. (original) The method of claim 1 wherein sealing the die comprises blowing
relatively inert gas onto the die while the cover is being attached.

25 11. (original) The method of claim 10 wherein the relatively inert gas is nitrogen.

12. (original) The method of claim 1 wherein the metal sheet substrate is copper, a
copper alloy, or a nickel-iron alloy.

30 13. (original) The method of claim 12 wherein forming the contact metal layer
comprises forming a gold-nickel layer.

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14. (original) The method of claim 12 wherein forming the contact metal layer comprises electro-plating a gold-nickel layer.

5 15. (original) The method of claim 1 further comprising:
separating the metal sheet substrate into a plurality of metal package bodies, each metal
package body having an inner cavity sealing a die within, each die electrically
connected to at least two of the external metal pads through at least two of the
half-etched cavities filled with the via metal.

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16. (original) The method of claim 1 wherein the die in the inner cavity is a crystal
blank for an oscillator.

17. (original) The method of claim 16 further comprising:
15 curing the conductive epoxy after the die is placed onto the conductive epoxy.

18. (original) The method of claim 1 further comprising:
covering the mounting surface of the metal sheet substrate with an insulator after the half-
etched cavities are formed,
20 whereby the external metal pads are separated from metal package bodies by the
insulator.

19. (original) A manufacturing process comprising:
applying a first resist to a mounting surface of a metal sheet and patterning the first resist
25 to form first openings to the metal sheet;
etching half-etched cavities in the first openings on the mounting surface of the metal
sheet;
removing the first resist and applying an insulator onto the mounting surface so that the
insulator fills the half-etched cavities to form filled cavities;
30 drilling holes within the half-etched cavities so that the holes are surrounded by the
insulator but have a depth sufficient to reach metal under the filled cavities;

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- filling the holes with metal to form via-metal-filled holes;
applying a metal layer to the mounting surface and patterning the metal layer into
external pads on the mounting surface, wherein the external pads connect to the
via-metal-filled holes;
- 5 applying a second resist to a second surface opposite the mounting surface of the metal
sheet and patterning the second resist to form second openings to the metal sheet;
etching die cavities that are larger than the half-etched cavities in the second openings on
the second surface of the metal sheet;
wherein the die cavities are sufficiently deep to reach the metal in the via-metal-filled
10 holes;
- applying conductive epoxy into the die cavities in the second surface, the conductive
epoxy placed onto the metal in the via-metal-filled holes exposed inside the die
cavities;
- placing die within the die cavities so that each die contacts at least two via-metal-filled
15 holes through the conductive epoxy; and
sealing the die cavity and separating the metal sheet into metal packages that contain die
in the die cavities, but are mounted to printed-circuit boards by the external pads
on the mounting surface.
- 20 20. (withdrawn) An annular-shaped manufacturing process comprising:
applying a first resist to a mounting surface of a metal sheet and patterning the first resist
to form first openings to the metal sheet;
etching half-etched cavities in the first openings on the mounting surface of the metal
sheet;
- 25 removing the first resist and applying an insulator onto the mounting surface so that the
insulator fills the half-etched cavities to form filled cavities;
wherein the half-etched cavities are annular shaped surrounding a metal island, and the
metal island within the annular shape forms via-metal-filled holes;
- applying a metal layer to the mounting surface and patterning the metal layer into
30 external pads on the mounting surface, wherein the external pads connect to the
via-metal-filled holes;

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- applying a second resist to a second surface opposite the mounting surface of the metal sheet and patterning the second resist to form second openings to the metal sheet; etching die cavities that are larger than the half-etched cavities in the second openings on the second surface of the metal sheet;
- 5 wherein the die cavities are sufficiently deep to reach the metal in the via-metal-filled holes;
- applying conductive epoxy into the die cavities in the second surface, the conductive epoxy placed onto the metal in the via-metal-filled holes exposed inside the die cavities;
- 10 placing die within the die cavities so that each die contacts at least two via-metal-filled holes through the conductive epoxy; and
- sealing the die cavity and separating the metal sheet into metal packages that contain die in the die cavities, but are mounted to printed-circuit boards by the external pads on the mounting surface.

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